
Differential expression of stem cell markers in human follicular bulge and interfollicular epidermal compartments.

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Public Summary:

Although skin contains a number of stem cell repositories, their characterization has been hindered by a lack of specific markers and an unclear in vivo localization. In this study, we whole mounted single human scalp hair follicles and examined their profiles using in situ immunohistochemistry and multicolor immunofluorescence in search of markers to distinguish between stem cells residing in the interfollicular epidermis (IFE) and bulge. Our study revealed that expression of several biomarkers localized uniquely to the basal IFE (CD34 and CD117), bulge region (CD200), or both (CK15, CD49f, and CD29). In addition, we found that both basal IFE and bulge stem cells did not express CD71 or CD24 suggesting their potential utility as negative selection markers. Dermal papilla but not basal IFE or bulge stem cells expressed CD90, making it a potential positive selection marker for dermal hair follicle stem cells. The markers tested in this study may enable pursuit of cell sorting and purification strategies aimed at determining each stem cell population's unique molecular signature.

Scientific Abstract:

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